Sean Higgins

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CS 500 – Ray Tracing

Prof. Herron

CS 500 Ray Tracing – Proj. 4 Report

Overview:

Just like the reflections before it, this project to implement transparency, transmission, and the refraction of light through objects has all been very simple and straightforward. Another additional probability check needed to be incorporated into deciding a ray’s path, this time to account for the possibility of the ray passing through the object, which is calculated based on how transparent vs. reflective the object is. Once the choice to follow a transmissive path is made, slight modifications to the direction of the light must be calculated based on the object’s index of refraction—how fast light travels through a particular object—as well as the color of the light must be changed to account for the amount of light that is ‘lost’, absorbed by the object. These calculations primarily use Snell’s Law and Beer’s Law, respectively, and, aside from those calculations, there are no other major changes to the lighting calculations that need to be made—the BRDF functions from before stay exactly the same! The final change that needed to be made to the project is the ability to read in materials that are, in fact, transparent to some degree, and this task is accomplished with very little hassle—barely ten lines of code, if that.

4234 Passes, slightly brightened to show the slight reflection on the reddish sphere better

